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Date: February 9, 2006 Must Be Sent By:
To: Examiner P. Myers Fax No: (571) 273-8300
Company: USPTO, Art Unit 2112 Phone No: (571) 272-3639
Re: In re Patent Application of
Inventor: Kim et al.
Appln. No.: 09/847,991
Filing Date: May 2, 2001
Title: CROSS BAR MULTIPATH RESOURCE CONTROLLER
SYSTEM AND METHOD

From: Anthony G. Smyth Phone No: 858.509.4007
User No: 15636 C/M No: 044204-0308162

Comments:

Attachment(s):

Notice of Appeal; Pre-Appeal Brief Request for Review, and Fee Transmittal for the above-identified application.

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PTO/SB/21 (02-04)

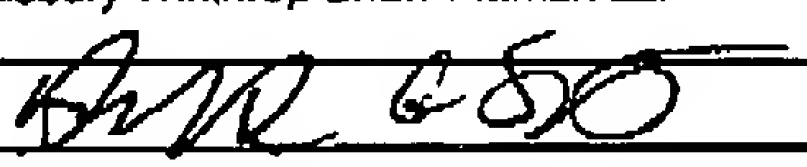
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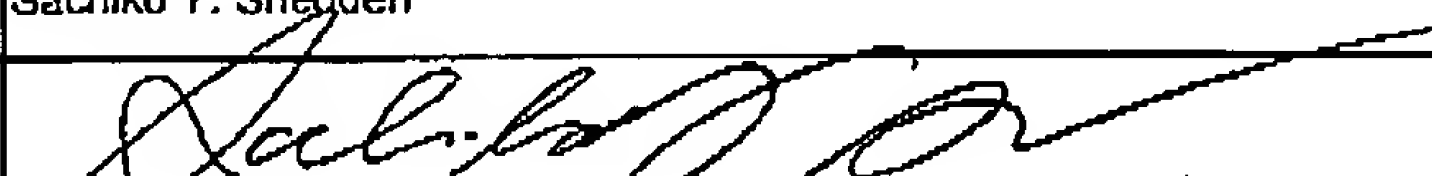
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	09/847,991	
	Filing Date	05/02/2001	
	First Named Inventor	Jason Seung-Min Kim	
	Art Unit	2112	
	Examiner Name	Myers, Paul R.	
Total Number of Pages in This Submission	12	Attorney Docket Number	044204-0308162

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Anthony G. Smyth, Reg. No. 55,636 Pillsbury Winthrop Shaw Pittman LLP
Signature	
Date	February 9, 2006

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FEE TRANSMITTAL for FY 2005		Application Number	09/847,991
		Filing Date	May 2, 2001
		First Named Inventor	Jason Seung-Min Kim
		Examiner Name	Myers, Paul R.
		Art Unit	2112
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Attorney Docket No.	044204-0308162
TOTAL AMOUNT OF PAYMENT		(\$ 250)	

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1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fee Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description

Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent

Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent

Multiple dependent claims

	Small Entity Fee (\$)
50	25
200	100
360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
- 20 or HP =	X	=				
HP = highest number of total claims paid for, if greater than 20						
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)			
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SUBMITTED BY		Registration No.	Telephone
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Name (Print/Type)	Anthony Smyth	Date	February 9, 2006

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<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	09/847,991
		Filing Date	May 2, 2001
		First Named Inventor	Jason Seung-Min Kim
		Examiner Name	Myers, Paul R.
		Art Unit	2112
TOTAL AMOUNT OF PAYMENT (\$) 250		Attorney Docket No.	044204-0308162

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	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	150	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee (\$)	
	Fee (\$)	Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims - 20 or HP = Extra Claims X Fee (\$) = Fee Paid (\$)

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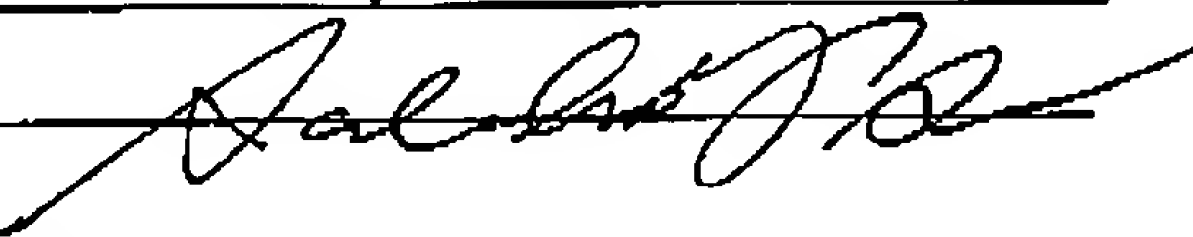

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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 044204-0318162			
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Art Unit 2112	Examiner Myers, Paul R.				
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record. <u>55636</u> Registration number</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34</p> </div> <div style="width: 45%; text-align: center;">  Signature Anthony G. Smyth Typed or printed name <u>650-233-4802</u> Telephone number <u>February 9, 2006</u> Date </div> </div> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below".</p>					
<input checked="" type="checkbox"/> Total of <u>1</u> forms are submitted.					

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Attorney Docket: 044204-0308162

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of: KIM ET AL. Confirmation Number: 5788
Application No.: 09/847,991 Group Art Unit: 2112

Filed: May 2, 2001

Examiner: MYERS, Paul R

Title: CROSS BAR MULTIPATH RESOURCE CONTROLLER SYSTEM AND METHOD

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By: 

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Alexandria, VA 22313-1450

Pre-Appeal Brief Request for Review

This brief is submitted concurrently with a timely filed Notice of Appeal in the above-listed Application. The Notice of Appeal is filed in response to the Office Action mailed on November 9, 2005. An Advisory Action was mailed January 19, 2006 in response to an After Final Amendment filed by Applicants on January 9, 2006.

REMARKS

Claims 1-27 remain pending in the Application of which claims 1, 11, 21, 24 and 27 are independent claims. The Final Office Action rejected claims 1-27 under 35 U.S.C. 103(a) as being allegedly unpatentable over U.S. Patent No. 6,636,933 to MacLellan et al. ("MacLellan") in view of U.S. Patent No. 5,394,551 to Holt et al. ("Holt"). Claims 1-3 also stand rejected under 35 U.S.C. 103 as allegedly being unpatentable over U.S. Patent No. 5,053,942 to Srinani ("Srinani") in view of Holt. Claims 1-3, 8-9, 11-13, 18-19, 21-22 and 24-25 stand rejected under 35 U.S.C. 103 as allegedly being unpatentable over U.S. Patent No. 6,125,429 to Goodwin et al. ("Goodwin") in view of Holt. Claims 1-2, 11-12, 21 and 24 stand rejected under 35 U.S.C. 103 as allegedly being unpatentable over U.S. Patent No. 5,081,575 to Hiller et al. ("Hiller") in view of Holt.

The MacLellan and Holt References do not Teach all Elements of the Claims

It is factually inaccurate to suggest that MacLellan and Holt teach a resource controller and a bus that is connected to each of one or more resources and to each of one or more processors. Independent claims 1, 11, 21 and 24 require a resource controller and bus that is connected to each resource and to each processor, wherein the resource controller is capable of permitting each processor to simultaneously access a different resource from the one or more resources, and wherein the resource controller includes a hardware semaphore unit for controlling access to the shared resources. Independent claim 27 requires a memory controller and a peripheral controller and plural busses. In the Final Office Action, the Examiner contends that MacLellan's crossbar switch system interface 160 teaches a bus that is connected to each resource and to each processor. This contention is clearly erroneous.

MacLellan teaches "a plurality of, here 32 front-end directors 180₁-180₃₂ coupled to the host computer/server 120 via ports-123₃₂; a plurality of back-end directors 200₁-200₃₂ coupled to the bank of disk drives 140 via ports 123₃₃-123₆₄" (see Fig. 2 and col. 4, line 65 – col. 5, line 2). "More particularly, in the case of the front-end directors 180₁-180₃₂, the data passes between the host computer to the global cache memory 220 *through the data pipe 316 in the front-end directors 180₁-180₃₂ ...*" and "[i]n the case of the back-end directors 200₁-200₃₂ *the data passes between the back-end directors 200₁-200₃₂ and the bank of disk drives 140 and the global cache memory 220 through the data pipe 316 in the back-end directors 200₁-200₃₂*" (col. 5, lines 22-34

with emphasis added). This excerpt demonstrates that MacLellan does not teach a bus that is connected to each resource and to each processor but rather teaches host computers and resources each having their own port and back-end director.

The Examiner's characterization of MacLellan implicitly acknowledges the lack of a teaching of a bus that is connected to each of one or more resources and to each of one or more processors. The Examiner states that "crossbar switch system interface 160 allows simultaneous accesses to different resources from different processors parallel transfers or simultaneous accesses" (Final Office Action page 2, lines 11-14). Thus, the Examiner apparently ignores explicit descriptions of structure in MacLellan and argues the claim rejections based on alleged similarities in results obtained by MacLellan and the claimed invention. Applicants respectfully submit that, alleged results notwithstanding, MacLellan does not teach the recited bus and actually teaches away from a bus connected to each resource and processor because MacLellan explicitly teaches individual ports and directors connecting processors and disk drives.

Nor does Holt teach a bus connected to each resource and to each processor. Holt is cited for the proposition that a semaphore can control access to a resource (Final Office Action page 2, lines 17-19). The Examiner also offers the hackneyed generalization that hardware and software are logically equivalent (Final office Action, page 4, lines 2-3). However, these arguments are moot because the Examiner cannot show why MacLellan would benefit from the use of a hardware semaphore unit. As discussed, *supra*, the system taught in MacLellan provides individual ports for computers and disk drives and an intervening cache memory (*see* col. 5, lines 22-34). In such a system, contention can be eliminated, thereby rendering a semaphore useless. Because MacLellan teaches away from the recited bus, it must necessarily teach away from the use of a semaphore and, more specifically, away from a resource controller that includes a hardware semaphore unit for controlling access to shared resources. Therefore, the rejections based on combinations of MacLellan and Holt are improper.

All Elements of the Claims are not Taught by Holt Combined with Srini, Goodwin or Hiller

In the Final Office Action, combinations of Srini, Goodwin and Hiller and Holt are cited in support of various claim rejections. However, none of these references teach a bus that is connected to each of one or more resources and to each of one or more processors. Instead, each of the Srini, Goodwin and Hiller references teaches the use of cross-connect or crossbar switches that create point-to-point connection between, e.g., a specific one of many processors and a

specific one of many memories. For at least the reasons provided above in the discussion of MacLellan, the rejections based on Srini, Goodwin and Hiller are also improper.

Furthermore, and as shown above, Holt does not teach a bus connected to each resource and to each processor and consequently does not cure the deficiencies of Srini, Goodwin or Hiller. Nor could motivation have existed for combining Holt with any of Srini, Goodwin and Hiller. Each of Srini, Goodwin and Hiller teach a switching mechanism for establishing point-to-point connections and the switching mechanisms are, by necessity, intrinsically aware of the availability of all resources connected to the switch. Consider Srini by way of example:

Srini is directed to a crossbar switch that provides individual connections for processors and memory (see Fig. 1 and col. 3, line 59 – col. 4, line 10). Srini teaches an *arbiter* for controlling access to a shared memory (see, e.g., Srini at col. 5, lines 21-35, emphasis added). Srini explicitly teaches access control based on an arbiter that is constructed as a tree of one-of-two arbiters employing a synchronous scheme (Srini at col. 5, lines 36-66). Srini teaches the importance of such a scheme in providing an arbiter that “must be impartial in the sense that it gives equal priority to the processors ...” and Srini further teaches that “no single processor can dominate a memory module while others are waiting for the same module” (col. 5, lines 17-21). Thus, Srini implements an apparently preemptive scheme that dictates connections rather than establishing connections based on an assessment of resource availability.

Although Srini teaches systems that have no need for semaphores, the Examiner suggests that motivation could have existed to replace or somehow supplement Srini’s arbiter with a hardware semaphore controller. Specifically, the Examiner offers that “Srini does not state how it knows which resource is in use” and “[p]reventing contention is the purpose of a semaphore that indicates which resource is in use.” With respect, this argument is specious because Srini’s resources are connected at the direction of the arbiter. Since the arbiter is in complete control of these connections, it must know exactly which resources are in use at all times. Thus, an impartial arbiter in a crossbar switch is aware of the status of status of all resources and the arbiter would have no use for a semaphore that functioned in the manner defined by the Examiner. Consequently, no motivation could have existed to combine the references as proposed by the Examiner and there could have been no expectation of successfully achieving an improvement or advantage by combining Holt with any of Srini, Goodwin and Hiller.

CONCLUSION

For at least the reasons provided, the rejections of the claims are improper because the prior art references fail to teach or suggest all the claim limitations, no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art would have existed to modify or combine the reference teachings and no reasonable expectation of success would have accrued from combining the references. Therefore, the rejections are improper and should be withdrawn. Further, the claims are believed to be in form for allowance, and such action is hereby solicited.

Date: February 9, 2006


PILLSBURY WINTHROP SHAW PITTMAN LLP

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Palo Alto, CA 94304-1114

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